stood, as a matter of course, that these cases must have presented especially favorable conditions for such success. It likewise shows that a radical operation from the exterior is not necessary in every instance of malignant neoplasm of the interior of the larynx.

Paralysis of the Vocal Cords.—DR. L. REVOL reports (*Annales des maladies de l'oreille, du larynx, etc.*, February, 1904) a case of bilateral recurrent paralysis of the larynx due to dilatation of the aorta as verified by radioscopic examination.

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

CHARLES HARRINGTON, M.D.,

ASSISTANT PROFESSOR OF HYGIENE, HARVARD MEDICAL SCHOOL.

Notes on Disinfectants.—*Green Soap.* An elaborate series of experiments with various mixtures of carbolic acid and the official green soap of the German Pharmacopœia, free from free alkali and containing 44.02 per cent. of water, has been made by DR. O. HELLER (*Archiv für Hygiene*, Bd. xlvii. p. 213), who employed cultures of bacillus typhosus as test objects. His conclusions are as follows: Green soap possesses but slight disinfectant power, but it increases that of pure carbolic acid, and most markedly when the two substances are present in equal amounts. While typhoid bacilli are destroyed in twenty minutes by a 5 per cent. solution of carbolic acid, the same result is obtained by the employment of a 4 per cent. solution of equal parts of the two agents; that is, with less than half the required amount of carbolic acid alone. By analogy, one may conclude that the employment of soap in the preparation of disinfectants containing cresols insoluble in water not only brings about their solution to the required extent, but increases their bactericidal properties. This increase in power must be attributed either to the feebly disinfectant power of the soap or to the formation of a new complex compound of greater power, or the solution of the phenol (or cresol) experiences an increase in its rate of dissociation through the presence of the soap, and with it an increase in efficiency. But soap increases the bactericidal power of phenol to an extent out of all proportion to its own power in the same direction, and the mere fact of increasing solubility can have little or no influence.

Creolin. The term "creolin," says DR. SAMUEL RIDEAL (*Public Health*, December, 1903, p. 156), seems to have been invented many years ago as a fancy name for an emulsion of cresols and neutral tar oils in a soap solution, and disinfectants under this name have been sold in different parts of the world and manufactured by several firms, who have from time to time modified the nature and the proportions of the various constituents without warning to the public. Samples of creolin, purchased in Brussels, Hamburg, and London, have been tested by him and found to have a disinfectant value varying from one and five-tenths to sixteen times that of pure carbolic acid. Chemical examination showed very wide differences in composition, which, however, furnishes no information as to their probable bactericidal value. Some specimens contain appreciable amounts of pyridine bases, which impart a very strong and characteristic odor, without contributing to the germicidal properties. He is of the opinion that if the name is to remain in the literature of the subject, a statement of the germicidal value in terms of some standard should be insisted upon in all cases.

Lysoform. Experiments with lysoform, a soft soap containing about 8 per cent. of formaldehyde and a small amount of volatile oil, conducted by GALLI-VALERIO (*Therapeutisches Monatsheft*, 1903, Bd. xvii. p. 452), bear out the findings of Symanski, Seydewitz, and others that it is slower in action than many other better-known agents. He found that a 5 per cent. solution required four hours' contact to destroy staphylococcus aureus, and that a 3 per cent. solution was ineffective against bacillus coli communis in less than forty-five minutes. SYMANSKI (*Zeitschrift für Hygiene und Infectionskrankheiten*, Bd. xxxvii. p. 393) killed staphylococci in pus with a 2 per cent. solution in five hours, and SEYDEWITZ (*Centralblatt für Bakteriologie und Parasitenkunde, I. Abth. Originale*, 1904, Bd. xxxii. p. 222) sterilized brushes infected with staphylococcus aureus and bacillus coli communis with a 5 per cent. solution in six hours, but cultures of these organisms by themselves were destroyed much more quickly. According to Symanski, lysoform is not irritant to the skin and mucous membranes, but Galli-Valerio asserts that solutions stronger than 3 per cent. cause too much irritation for local application in abdominal surgery.

Mercuric Cyanide. A series of tests of the bactericidal properties of mercuric cyanide, which is advocated in some quarters as an agent superior in some respects to corrosive sublimate, led HARRINGTON (*Boston Med. and Surg. Journal*, January 14, 1904) to conclude that this agent can hardly be classed among efficient germicides for surgical purposes. A 1 : 1000 solution was found to require more than three hours' contact to destroy staphylococcus aureus, and one of 1 : 500 exerted no bactericidal influence whatever against the same organisms at the end of a half-hour, beyond which time the experiments were not continued.

Hypochlorous Acid. Recent investigation having shown that, in solutions of chlorine containing about 0.05 per cent. of the gas, more than 90 per cent. of the chlorine exists in the form of hypochlorous and hydrochloric acids, and it appearing not improbable that chlorine exerts its disinfectant action as hypochlorous acid, DRS. F. W. ANDREWES and K. J. P. ORTON (*Centralblatt für Bakteriologie und Parasitenkunde, I. Abth. Originale*, 1904, Bd. xxxv. p. 645) undertook a research to determine the germicidal action of the acid in a pure state. Accordingly, pure preparations of the acid were made and tested, and although the results obtained were at times conflicting, owing to the instability of the preparations when exposed to light and in the presence of traces of organic matter, the germicidal activity of the acid appeared to be of the most intense character. In filtered suspension in pure water, anthrax spores were killed by a 1 : 10,000 strength of hypochlorous acid in the total mixture in thirty seconds. Watery suspensions of the spores, dried on thick silk threads, were destroyed by a 7 : 1000 solution in five minutes, but spores of bacillus subtilis required twenty minutes. Staphylococcus aureus in suspension in pure distilled water was sterilized by a 1 : 100,000 solution in one minute, but not in fifteen seconds. A 1 : 250,000 solution just failed to kill a watery suspension of staphylococcus aureus in five minutes, but it killed a similar suspension of bacillus coli communis in between thirty and sixty seconds. In the presence of organic matter, and especially of proteids, it was anticipated that so unstable an acid would rapidly be decomposed and rendered inert; that it would prove almost devoid of inhibiting power in such a medium as bouillon; and that, up to a certain point, it would be rendered inert by the organic matter present, and, beyond it, it would kill quickly, with no extensive intermediate stage, such as is seen with phenol or corrosive sublimate, in which growth is restrained without actual death of the bacteria. Such was found to be the case, for while staphylococci in distilled water were killed immediately by 1 : 100,000, their growth in veal bouillon was restrained only by 1 : 5000, but they were destroyed within thirty minutes by 1 : 3000. Having satisfied themselves as to the intense germicidal activity of the pure acid and to the extent to which its power is impaired by the presence of organic matter, they investigated the principal methods by which it is or may be actually employed in practical disinfection, as in the form of chlorine water, bleaching-powder solutions, and mixtures of hydrochloric acid with oxidizing agents. They found that chlorine water is even more potent than is indicated by the figures of Krönig and Paul, for a watery suspension of anthrax spores, dried on quartz pebbles, was killed usually in between thirty and sixty seconds by a 0.015 per cent. solution, and in filtered suspension in distilled water by a 0.010 per cent. solution in ten seconds. The addition of hydrochloric acid to the extent of 0.4 per cent. by weight of the gas was found not to increase the germicidal power of the chlorine, but rather to weaken it. On the other hand, the germicidal power of bleaching-powder solution is increased by the addition of a weak acid (acetic and carbonic are the best) to liberate free hypochlorous acid (a strong acid liberates free chlorine). A saturated solution of bleaching-powder, containing 5 per cent. of calcium hypochlorite and so strong as to disintegrate a marine sponge in a minute, took between seven and ten minutes to destroy dried anthrax spores; but the same solution, diluted with twice its volume of 1.25 per cent. acetic acid, destroyed them in less than a minute. Hence, in employing bleaching-powder as a germicide, the addition of vinegar, or even free exposure to the carbon dioxide of the air, will be found of much value. Krönig and Paul's combination of potassium permanganate and hydrochloric acid was found to be slow (nearly four hours) in destroying anthrax spores dried on silk threads. As a substitute they tried a mixture of 1.1 c.c. hydrochloric acid, 3.7 grams ammonium persulphate $[(NH_4)_2S_2O_8]$ and 95 c.c. water, in which, even after many weeks' keeping, the amount of chlorine and hypochlorous acid present amounts only to 0.008 per cent. At first the mixture is absolutely odorless, but in half an hour it has an extremely faint chlorous odor, which increases hour by hour until after three to four days it is very strong, indeed, and is that of hypochlorous acid rather than that of free chlorine. Its disinfectant value is at first very slight, but when six days old it will destroy anthrax spores in less than a minute. The mixture has the great advantage that it is colorless, transparent, and wholly devoid of staining power. Although both mixtures act at a great disadvantage in the presence of organic matter, the persulphate mixture is considerably the more effective in the presence of moderate amounts of albuminous material. The chief use appears to lie in the disinfection of the skin, in which role it proved experimentally to be quite successful. Thus, hands well scrubbed with soap and hot water and soaked in the solution for five minutes were found to give no growths from scrapings from beneath the nails and about their roots; but it blackens and spoils metallic instruments, with which it should not be brought in contact.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF
SIMON FLEXNER, M.D.,
DIRECTOR OF THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, NEW YORK.
ASSISTED BY
WARFIELD T. LONGCOPE, M.D.,
RESIDENT PATHOLOGIST, PENNSYLVANIA HOSPITAL, PHILADELPHIA.

Ascending Renal Infection; with Special Reference to the Reflux of Urine from the Bladder into the Ureters as an Etiological Factor in its Causation and Maintenance.—Combining experimental investigations with careful clinical observations, Sampson (*Johns Hopkins Hosp. Bull.*, 1903, vol. xiv. p. 334) has brought out many interesting facts concerning the anatomy and physiology of the ureters and urinary bladder, and has done much to explain the origin of ascending renal infections. He finds that the vesical portion of the ureter changes under various degrees of dilatation and of intravesical tension of the bladder, and in each of these conditions there is special provision for guarding the lumen of the ureter and thus preventing a reflux of urine from the bladder into the ureter. Under all conditions of the bladder the direction of the current of urine from the kidney to the bladder is a constant factor in the prevention of ascending infection. In addition, if the bladder is distended the ureteral orifice is protected by the oblique course of the ureter, the long ureteral valve, the lateral walls of the labia of the ureteral orifice, and the mucosa of the ureter. But if the bladder is contracted the course of the ureter is not so oblique, the ureteral valve is shorter, and these factors play a less important part. On the other hand, additional protection is afforded by a puckering of the ureteral orifice, for the ureteral labia come together, and the ureteral mucosa is thrown into folds. The anatomical structure and physiological action of the ureters, as well as clinical experience, would indicate that the function of the ureters is not only to carry urine away from the kidneys to the bladder, but also to prevent fluid from passing into the ureters from the bladder, and under normal conditions it is impossible for the latter to take place. It was practically impossible,